REMARKS

This application has been reviewed in light of the final Office Action mailed on February 19, 2009 and the Advisory Action mailed on June 16, 2009. Claims 21-23, 26-28, 30, 32, 34, and 42-49 remain pending in this application, with claim 21 being independent. Claim 21 has been amended. Claims 1-16 and 38-41 have been canceled without prejudice or disclaimer of subject matter.

Claims 1-7, 10-15, 21-23, 26, 27, 39-43, and 47-49 stand rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent Application Publication No. US 2004/0001661 A1 to Iwaki in view of the publication by Cumpston et al. entitled "Two-photon polymerization initiators for three-dimensional optical data storage and microfabrication", Nature, vol. 398, March 1999, pp. 51-54 (hereinafter Cumpston); claims 8, 9, 28, 30, 32, 38, and 44-46, as being obvious from Iwaki in view of Cumpston and further in view of U.S. Patent No. 6,684,007 to Yoshimura; and claims 16 and 34, as being obvious from Iwaki in view of Cumpston and further in view of U.S. Patent No. 5,255,070 to Pollak.

First, cancellation of claims 1-16 and 38-41 renders the rejections of those claims moot.

Applicants submit that independent method claim 21, together with the claims dependent therefrom, are patentably distinct from the cited references for at least the following reasons.

Claim 21 is directed to a method for producing a printed circuit board element. The method includes mounting at least one optoelectronic component to a substrate. The method also includes subsequently applying to the substrate an optical layer, comprised of an optical material changing its refractive index under photon irradiation, while embedding the optoelectronic component in the optical layer.

The method also includes determining, by an optical vision unit, a position of the

optoelectronic component embedded in the optical layer. The optical vision unit subsequently controls a radiation unit including a lens system to displace the focal area of the emitted laser beam, in the plane of the printed circuit board element, and adjusts the focal area also in terms of depth within the optical layer.

Thereafter, the method includes producing an optical waveguide structure adjoining the optoelectronic component within the optical layer by photon irradiation, the optical waveguide structure being surrounded by the remaining optical layer.

By using the respective optoelectronic component as a reference element according to the features of amended claim 21, the optical waveguide can, thus, be designed as desired within the optical layer, for instance, as a simple, straight optical waveguide connection or as a waveguide structure having branches or similar structures or, in particular, even as a three-dimensional structure. The cross-sectional dimensions of the thus-structured optical waveguide can, for instance, be on the order of some micrometers, possible cross sections of thus-structured optical waveguides including, for instance, elliptical to rectangular cross sections. The exact shape can be determined by the photon beam and its focus control. See the present specification at, e.g., page 4, lines 7-28.[1]

Nothing in the cited references, whether considered either separately or in any permissible combination (if any) would teach or suggest "determining, by an optical vision unit, a position of the optoelectronic component embedded in the optical layer," and "subsequently controlling, by said optical vision unit, a radiation unit including a lens system to displace the focal area of the emitted laser beam, in the plane of said printed circuit board element, and

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[1]It is of course to be understood that the references to various portions of the present application are by way of illustration and example only, and that the claims are not limited by the details shown in the portions referred to.

adjusting the focal area also in terms of depth within the optical layer," as recited in amended claim 21.

Accordingly, amended claim 21 is seen to be clearly allowable over the cited references.

The other claims in this application are each dependent from independent claim 21 discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Respectfully submitted,

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